

CLAIMS

What is claimed is:

1. An organic waste material processing system for the anaerobic digestion of high-solids waste, the waste material processing system comprising:
  - 5 a closed container for holding high solids waste material, the closed container including
    - a first passage in which the waste material flows in a first direction, the first passage having first and second ends, the first end including an inlet for waste material,
    - a second passage in which the waste material flows in a second direction  
10 opposite the first direction, the second passage having first and second ends, the second end including an outlet, the first passage being separated from the second passage by a divider, the second end of the first passage being adjacent the first end of the second passage, and the first end of the first passage being adjacent the second end of the second passage;
  - 15 a heating device containing heating medium and positioned to heat the waste material to form heated waste material; and
  - a partition.
2. The organic waste material processing system of claim 1, wherein the  
20 heating device is positioned adjacent a wall of the closed container in at least a portion of at least one of the first passage and the second passage to cause thermal mixing of the waste material.
3. The organic waste material processing system of claim 1, wherein the  
25 closed container further includes a conduit having at least one gas outlet positioned to promote upward movement of the heated waste material utilizing recycled biogas.
4. The organic waste material processing system of claim 1, wherein the  
30 partition is positioned relative to the divider such that a space is created between the partition and the divider, and wherein the heating device is positioned within the space for heating the waste material and enabling heated waste material to flow upwardly within the space.

5. The organic waste material processing system of claim 1, wherein the partition is positioned relative to a wall of the closed container such that a space is created between the partition and the wall, and wherein the heating device is positioned within the space for heating the waste material and enabling heated waste material to flow upwardly within the space.

6. The organic waste material processing system of claim 1, wherein the partition has a top edge and a bottom edge, the top edge being spaced a distance from a top of the closed container, and the bottom edge being spaced a distance from a bottom of the closed container.

7. The organic waste material processing system of claim 1, wherein the partition is positioned such that a space is created between the partition and a wall of the closed container through which heated waste material moves in an upwardly direction.

8. The organic waste material processing system of claim 7, wherein the heating device is positioned within the space.

9. The organic waste material processing system of claim 7, wherein the partition has a top edge over which heated waste material moves out of the space.

10. The organic waste material processing system of claim 7, wherein the partition has a bottom edge under which waste material moves into the space.

11. The organic waste material processing system of claim 1, wherein the heating device comprises a conduit.

12. The organic waste material processing system of claim 1, wherein the heating medium comprises water.

13. The organic waste material processing system of claim 1, wherein the heating medium comprises a gas.

14. The organic waste material processing system of claim 1, wherein the heating device and the partition are positioned to promote a corkscrew-like movement of the waste material such that heated waste material moves generally upward and cooled waste material moves generally downward as the waste material flows in at least one of the first direction and the second direction.

15. A method for the anaerobic digestion of high-solids waste, the method comprising:  
providing a closed container including  
a first passage in which the waste material flows in a first direction, the first passage having first and second ends, the first end including an inlet for waste material, and  
a second passage in which the waste material flows in a second direction opposite the first direction, the second passage having first and second ends, the second end including an outlet, the first passage being separated from the second passage by a divider, the second end of the first passage being adjacent the first end of the second passage, and the first end of the first passage being adjacent the second end of the second passage; and  
moving the high-solids waste in a corkscrew-like fashion through at least one of the first passage and the second passage.

16. The method of claim 15, further comprising contacting the high-solids waste with a heating device to facilitate the corkscrew-like movement.

17. The method of claim 16, further comprising using a conduit from which liquid or gas is discharged to facilitate the corkscrew-like movement.

18. The method of claim 15, further comprising using a conduit from which liquid or gas is discharged to facilitate the corkscrew-like movement.

19. A method for the anaerobic digestion of high-solids waste, the method comprising:

moving the high-solids waste into contact with a heating device in a closed container; and

5 moving the solid waste in a corkscrew-like fashion through the container.

20. The method of claim 19, further comprising using a conduit from which liquid or gas is discharged to facilitate the movement of the solid waste in a corkscrew-like fashion.

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21. The method of claim 20, wherein the conduit discharges gas, and the gas is recycled biogas.